

CONSUMER PRODUCT INCIDENT REPORT

H350011A1

by Phifer Wire Products, Inc., emitted chemical fumes that were making some people sick.

5/3/93 The hard plastic corner frame of 1 of consumer's 14 window screens broke. Consumer took screen to dealer for repair and while driving in car with screen consumer developed a headache and upset stomach from the fumes emitting from screen.

Consumer explained problem to dealer (name unknown), who had received similar complaints and offered to replace consumer's screens with a different type of screen made by the same screen manufacturer. Consumer accepted the offer.

5/3/93 Consumer called and explained problem to Charlie Brakefield (title unknown) at screen manufacturer, who said the fiberglass screens had been coated with vinyl that gradually breaks down when sunlight hits screens causing odor. Mr. Brakefield said the screens were made in '88 and '89.

Consumer obtained CPSC hotline telephone number from TV news broadcast.

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EASQ CONSUMER PRODUCT INCIDENT REPORT

1. NAME OF RESPONDENT <i>Phifer Wire Prod</i>		2. TELEPHONE NO. (Home) (Work)	
3. STREET ADDRESS <i>Phifer Wire Prod</i>		4. CITY STATE ZIP CODE <i>Tuscaloosa, AL</i>	
5. DESCRIBE ACCIDENT SITUATION OR HAZARD, INCLUDING DATA ON INJURIES. (Use second page if necessary.) <div style="font-size: 1.2em; font-family: cursive;"> Complainants believe that fiberglass window ^{sun}screen is emitting toxic off gas. </div>			
6. DATE OF INCIDENT(S)	7. IF INJURY OR NEAR MISS, OBTAIN AGE _____ SEX _____ AND DESCRIBE INJURY _____	8. IF VICTIM DIFFERENT FROM RESPONDENT, PROVIDE NAME _____ RELATIONSHIP _____	
9. DESCRIPTION OF PRODUCT <i>Fiberglass Window Sun Screen</i>		10. BRAND NAME	
11. MANUFACTURER/DISTRIBUTOR NAME, ADDRESS & PHONE <i>Phifer Wire Prod Tuscaloosa, AL</i>		12. MODEL, SERIAL NO.'S	
14. WAS THE PRODUCT DAMAGED, REPAIRED OR MODIFIED? YES _____ NO _____ IF YES, BEFORE OR AFTER THE INCIDENT? _____ Describe _____		13. DEALER'S NAME, ADDRESS & PHONE	
15. PRODUCT PURCHASED NEW _____ USED _____ DATE PURCHASED _____ AGE _____		16. DOES PRODUCT HAVE WARNING LABELS? IF SO, NOTE: _____	
17. HAVE YOU CONTACTED THE MANUFACTURER? YES _____ NO _____ IF NOT, DO YOU PLAN TO CONTACT THEM? YES _____ NO _____ OTHER _____		18. IS THE PRODUCT STILL AVAILABLE? YES _____ NO _____ IF NOT, ITS DISPOSITION	
FOR ADMINISTRATION USE			
20. DATE RECEIVED <i>6/10/93</i>	21. RECEIVED BY (Name & Office) <i>J. Hayes</i>		22. DOCUMENT NO. <i>X3 97545(A-M)</i>
23. FOLLOW-UP ACTION <div style="text-align: center; font-size: 1.5em; font-weight: bold;">SEP 17 1993</div>			24. PRODUCT CODE(S)
25. DISTRIBUTION		26. ENDORSER'S NAME & TITLE <div style="font-size: 2em; font-family: cursive; text-align: right;">341</div>	

A
930916ccc1593
Diane Morze
281 Fox Run Rd
Exton, PA 19341

B
930916ccc1591
William J. Larkin, Esq.
8 Bridge Street
Northampton, MA 01060
(418) 586-6622
Re: Diane + Walter Geryk

C
930916ccc1590
Ms. Sandra Leary
9 Plantation Rd
Hatfield, MA 01038
phone # unknown

D
930916ccc2595
~~Claudia Fullerton - Dannelly Hadden
6859 Tanglewood Esquire
Waterford, ME 48327 (513) 741-5051~~

E
930916ccc2592
~~Lisa Kelly
16600 Sun Valley Dr.
Clarkston, MI 48348
1-313-391-4434~~

F2

Kevin & Carolee Chase

6881 Vail Court

Clarkston, MI 48348

(313) 391-3972 (home) (813) 643-9444 (wk)

930916ccc2589

G2

Mr. & Mrs. Joe Golarz

(813) 391-1675

MI

930916ccc2588

H

Mrs. Fulerton

~~██████~~

(313) 681-8585

MI

930916ccc2587

I

Gertrude Karnuda

8620 E. Bellview #1115

Scottsdale, AZ 85257

(602) 970-2012

930916ccc3594

J

Mr. & Mrs. Tom King

(602) 391-9106

AZ

930916ccc3586

(K)

Mr. & Mrs. James Brown

(602) 867-8457 AZ

9309163585

(L)

Mr. & Mrs. Rika

(602) 974-4001

AZ

9309163583

(112)

Mr. & Mrs. Sunby

(602) 860-2709

AZ

9309163582

543

P O 1

Post-it brand

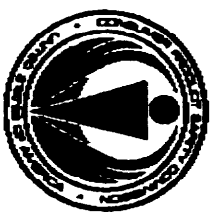
Fax Transmittal Memo 7672

To *Judy Hayes*
Company *DEPSCY*
Location *CECH*
Fax # *301/504-0124* Telephone # *504-0608*
Comments

From
Company
Location

memo about paper wire fastener product.

United States Government
Consumer Product Safety Commission



(602) 378-3510

ZANNIE E. WEAVER
Arizona Resident Investigator

822 North Central Avenue
Room 207
Phoenix, Arizona 85004

06/02/93 10:15 AM P O 1

United States Government


Consumer Product
Safety Commission

MEMORANDUM

Arizona Office

5-06-93

TO: Dorothy L. Collier, Supervisor, FOWR
FROM: Zannie E. Weaver, Investigator, Arizona
SUBJECT: Sec. 15 Hazard - Window Sun Screen from
Phifer Wire Products, Tuscaloosa, Alabama



I received information from Chief Norman Peterson, Arizona Department of Health, Office of Risk Assessment & Investigations, about a potential Section 15 problem involving a product from Phifer Wire Products.

Over the past two (2) years the Arizona Dept. of Health has received roughly 12 complaints about the firm's household window screen product known as a Sun Screen. The product is a household window screen which is designed so that the screen mesh will block out/prevent a large amount of the sun light from entering the house.

Consumers are complaining that the product starts deteriorating after a few years and releases chemicals which cause them to develop various health problems such as respiratory difficulties, eye, nose and skin irritation.

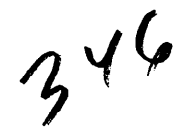
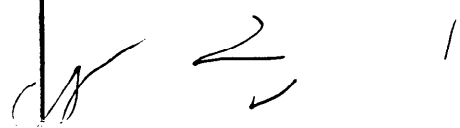
A local television station, KTVT (ABC affiliate channel 3), did a news story during April on this problem. Reporters indicated that the firm recalled some of their 1988 Sun Screens due to poor quality. The firm's management informed the television reporters that their sun screen product does not present any health hazards.

I contacted EPIC (National Injury Information Clearinghouse) and asked that a short computer search be run on this firm's sun screen. EPIC searched back to 1985 and could only find one complaint. It was dated 1992 and came from Michigan.

CPSC has received one incident report while the state of Arizona has received 12. This makes a total of 13 incidents.

You may wish to notify the Central Regional Center (FOCR) and the Atlanta Satellite Office (ATL) about this potential Section 15 problem involving Sun Screens from:

Phifer Wire Products
P.O. Box 1700
Tuscaloosa, Alabama



TC 23 TH
B-51

CONSUMER PRODUCT INCIDENT REPORT

1. NAME OF RESPONDENT <i>Arizona Atty Gen. Office</i>		2. TELEPHONE NO. (Home) (Work)	
3. STREET ADDRESS		4. CITY STATE ZIP CODE	
5. DESCRIBE ACCIDENT SITUATION OR HAZARD, INCLUDING DATA ON INJURIES. (Use second page if necessary.) <i>Fiberglass window sun screen has been implicated as a source of toxic offgassing by 30 Arizona residents - the first 10 complaints are attached</i>			
6. DATE OF INCIDENT(S)	7. IF INJURY OR NEAR MISS, OBTAIN AGE SEX AND DESCRIBE INJURY	8. IF VICTIM DIFFERENT FROM RESPONDENT, PROVIDE NAME RELATIONSHIP	
9. DESCRIPTION OF PRODUCT <i>Fiberglass Window Sun Screen</i>		10. BRAND NAME	
11. MANUFACTURER/DISTRIBUTOR NAME, ADDRESS & PHONE <i>Phifer Wire Products</i>		12. MODEL, SERIAL NO.'S	
		13. DEALER'S NAME, ADDRESS & PHONE	
14. WAS THE PRODUCT DAMAGED, REPAIRED OR MODIFIED? YES NO IF YES, BEFORE OR AFTER THE INCIDENT? Describe		15. PRODUCT PURCHASED NEW USED DATE PURCHASED AGE	
		16. DOES PRODUCT HAVE WARNING LABELS? IF SO, NOTE:	
17. HAVE YOU CONTACTED THE MANUFACTURER? YES NO IF NOT, DO YOU PLAN TO CONTACT THEM? YES NO OTHER		18. IS THE PRODUCT STILL AVAILABLE? YES NO IF NOT, ITS DISPOSITION	
		19. MAY WE USE YOUR NAME WITH THIS REPORT? YES NO	
FOR ADMINISTRATION USE			
20. DATE RECEIVED <i>6/10/93</i>	21. RECEIVED BY (Name & Office) <i>J. Hayes</i>		22. DOCUMENT NO. <i>X3 97547(A-J)</i>
23. FOLLOW-UP ACTION			24. PRODUCT CODE(S)
25. DISTRIBUTION		26. ENDORSEER'S NAME & TITLE	

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Consumer Information & Complaints System

PV: PHIFER WIRE PRODUCTS

Generated On Thursday June 10, 1993

1:28 PM

Alphabetical MAILING LIST - By Complainant

COMPLAINANT INFORMATION

Full Name, Affiliation, Address & Phone

(A)
930916CCC3603
• JOBY, DONALD
10877 E YUCCA
SCOTTSDALE, AZ 85259
(602) 860-2709

(B)
930916CCC3604
• KING, SCOTT
9410 E. LARKSPUR DR.
SCOTTSDALE, AZ 85260
(602) 274-5700

(C)
930916CCC3605
• MARTIN, CYNTHIA
3355 W. GRANDVIEW
PHOENIX, AZ 85023
(602) 848-5250

(D)
930916CCC3606
• MYERS, BRENDA
5759 W HARRISON ST
CHANDLER, AZ 85226
(602) 961-3577

(E)
930916CCC3607
• PAWLAK, VINCENT
16233 N. 35TH PLACE
PHOENIX, AZ 85032
(602) 867-0581

(F)
930916CCC3607
• ROBERT, SMITH
9717 W CHINO DRIVE
PEORIA, AZ 85382
(602) 566-8550

(G)
930916CCC3578
• SIENER, GARY
842 N. ST. ELENA
GILBERT, AZ 85234
(602) 497-6012

(H)
930916CCC3579
• SKOLNICK, SUSAN
8964 E CAMINO DEL SANTOS
SCOTTSDALE, AZ 85260
(602) 661-0155

(I)
930916CCC3580
• STEWART, DEBBIE
5205 W THUNDERBIRD #2057
GLENDALE, AZ 85306
(602) 978-8458

(J)
930916CCC3581
• WATSON, GENE
2526 E. VISTA DR.
PHOENIX, AZ 85032
(602) 992-8914

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Consumer Information & Complaints System

PV: PHIFER WIRE PRODUCTS

Generated On Thursday June 10, 1993

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0,030 Total Complainant(s)

349

7C23 74
B51

CONSUMER PRODUCT INCIDENT REPORT

1. NAME OF RESPONDENT <i>Arizona Atty Gen Office</i>		2. TELEPHONE NO. (Home) (Work)	
3. STREET ADDRESS		4. CITY STATE ZIP CODE	
5. DESCRIBE ACCIDENT SITUATION OR HAZARD, INCLUDING DATA ON INJURIES. (Use second page if necessary.) <i>Fiberglass window sun screen has been implicated as a source of toxic offgassing by 30 Arizona residents. The names of the first 20 complaints are attached.</i>			
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9. DESCRIPTION OF PRODUCT <i>Fiberglass Window Sun Screen</i>		10. BRAND NAME	
11. MANUFACTURER/DISTRIBUTOR NAME, ADDRESS & PHONE <i>Phifer Wire Products</i>		12. MODEL, SERIAL NO.'S	
		13. DEALER'S NAME, ADDRESS & PHONE	
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17. HAVE YOU CONTACTED THE MANUFACTURER? YES NO IF NOT, DO YOU PLAN TO CONTACT THEM? YES NO OTHER	18. IS THE PRODUCT STILL AVAILABLE? YES NO IF NOT, ITS DISPOSITION	19. MAY WE USE YOUR NAME WITH THIS REPORT? YES NO	
FOR ADMINISTRATION USE			
20. DATE RECEIVED <i>6/10/93</i>	21. RECEIVED BY (Name & Office) <i>J. Hayes</i>	22. DOCUMENT NO. <i>X3 97546(A-T)</i>	
23. FOLLOW-UP ACTION <div style="text-align: center;">SEP 17 1993</div>		24. PRODUCT CODE(S)	
25. DISTRIBUTION		26. ENDORSEER'S NAME & TITLE	

Consumer Information & Complaints System

PV: PHIFER WIRE PRODUCTS

Generated On Thursday June 10, 1993

1:28 PM

Alphabetical MAILING LIST - By Complainant

COMPLAINANT INFORMATION

Full Name, Affiliation, Address & Phone

• ABERBACH, MORRIS
28407 N. 63RD ST.
CAVE CREEK, AZ 85331
(602) 585-5373

• AVILEZ, CYNTHIA
102 W VERA LANE
TEMPE, AZ 85284
(602) 940-0156

• BOYER, MARJORIE
14817 N. 50TH PLACE
SCOTTSDALE, AZ 85254
(602) 996-0523

• BROCKMAN, ANN
943 W. DIAMOND DR.
TEMPE, AZ 85283
(602) 897-7197

• BROWN, MARY
5445 E. KELTON LANE
SCOTTSDALE, AZ 85254
(602) 996-4387

• CAPRARO, LILLIAN
1921 E CORTEZ DRIVE
GILBERT, AZ 85234
(602) 497-6741

• CARTER, RUBY
117 CORY #204
PRESCOTT, AZ 85303
(602) 771-0992

• CHICOINE, GARY
1709 W OAKLAND COURT
CHANDLER, AZ 85224
(602) 821-0050

• CHURCH, PATRICIA
1274 AVENIDA FRESCA
CASA GRANDE, AZ 85222
(602) 836-8667

• DECHERT, EDITH
13840 N DESERT HARBOR DR
APT. #232
PEORIA, AZ 85381
(602) 977-9797

E.I.R. EXHIBIT

MFR

DATE

INSPECTOR

list of 30 inquiries/complaints
to Arizona Atty. Gen.'s
office

Phifer Wire Product
- phifer glass window
sun screen
- adverse health affects
toxic off-gassing

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Consumer Information & Complaints System

PV: PHIFER WIRE PRODUCTS

Generated On Thursday June 10, 1993

1:28 PM

Alphabetical MAILING LIST - By Complainant

COMPLAINANT INFORMATION

Full Name, Affiliation, Address & Phone

DERDAN, MAURY

2534 N. DORAL CIRCLE

MESA, AZ 85205

(602) 396-0386

DICKS, ILLA

8976 E CAMINO DEL SANTO

SCOTTSDALE, AZ 85260

(602) 451-7955

DROLL, CHUCK

601 E. BAUGHN

GILBERT, AZ 85234

(602) 926-8041

GIBRIL, ABDUL

1651 S DOBSON RD #18351

MESA, AZ 85282

(602) 820-7648

GODBEHERE, KATHLEEN

4826 E AVALON DRIVE

PHOENIX, AZ 85018

(602) 000-0000

GRANT, O. J.

6349 N. 78TH STREET #90

SCOTTSDALE, AZ 85250

(602) 443-8307

HALL, SHARON

1053 W CANTEBRIO DRIVE

GILBERT, AZ 85234

(602) 545-5578

HANSON, BRUCE

2255 E. GABLE

MESA, AZ 85204

(602) 926-0755

HOCKLEY, ROGER

17438 N 63RD AVENUE

GLENDAL, AZ 85308

(602) 862-5439

JANVA, ALBERTINA

13629 HAWTHORNE DR.

SUN CITY, AZ 85351-2318

(602) 977-9145

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SCHOOL OF
PUBLIC HEALTH

Department of Environmental Health Sciences

E.I.R. EXHIBIT

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MFR

DATE

6/10/11/93

INSPECTOR

February 21, 1992

Mr. Anthony Gamble
Phifer Wire Products, Inc.
P.O. Box 1700
Tuscaloosa, AL 35403-1700

Dear Anthony:

We have essentially completed our assessment of the source of the odors associated with the polymer coated fiberglass screening material you recently sent to us.

In order to qualitatively describe the odors believed to be originating from the polymer coated fiberglass screen material, the initial studies in our laboratory utilized approximately 30 square centimeter samples of various aged and non-weathered screen material cut into 1 cm square pieces as representations of the bulk material.

These samples were introduced into glass vials and sealed with teflon crimp cap seals. The glass vials were placed in a Hewlett-Packard model 19354 Headspace Analyzer which was interfaced to a Hewlett-Packard model 5890 Gas Chromatograph using a Hewlett-Packard model 5971 Mass Spectrometer as the detector. The column in the gas chromatograph was a 25 meter HP5. The headspace sampler was set to a total carrier flow of 90 ml/min, with auxiliary pressure set at 1.4 bar. The sample loop in the headspace analyzer had a 1 ml total volume. The split ratio on the gas chromatograph was 1:4, with a column head pressure of 4 psi. The gas chromatograph was operated isothermally at 120 degrees centigrade. The mass spectrometer scanned from 30 to 500 m/z.

Headspace optimization included sampling a mixed composite of aged and non-weathered samples of screen material at temperatures ranging from 50 degrees centigrade to 120 degrees centigrade. It was found that peak height of compounds originating from these samples increased with temperature until 110 degrees. At temperatures higher than this a broad non-specific peak appeared indicating possible degradation of the polymer material.

Analyses carried out on aged and non-weathered samples presented evidence that release of compounds from the samples increases with

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The gas chromatograph was set to a split vent flow of 20 ml/min resulting in a total of 100 ml/min flow. The purge vent was set to 5 ml/min resulting in a 1:20 split ratio. The gas chromatograph was operated at 120 degree centigrade initially for 7 minutes then ramped to 250 degrees centigrade at 10 degrees centigrade per minute, then programmed to remain at that temperature for 10 minutes. A Hewlett-Packard FFAP 50 meter x 0.2 um column was installed for these analyses.

The mass spectrometer was programmed to scan from 35 to 450 M/Z.

For the series of vinyl coated samples, the headspace sampler operated at 140 degrees centigrade. Each sample consisted of approximately 24 square inches of material rolled into the headspace sampler vial.

Increasing temperature of the headspace sampler resulted in successively higher amounts of degradation materials to be transferred to the gas chromatograph. Seven peaks were predominant in this series of samples, indicating at least seven separate compounds. There were also several other small peaks with signals too low to provide sufficient qualitative information for characterization.

Three samples of differing materials were analyzed at 140 degrees centigrade. These included the bronze vinyl coated fiberglass from Arizona, the gray vinyl coated material included with the bronze material, and another sample of gray vinyl coated material from a round mailing tube. Each of these samples exhibited similar chromatographic behavior. That is, they all exhibited the same seven peaks as shown on the associated chromatographs attached to this report.

The mass spectra of each of these peaks was matched with NBS standard spectra and the ten best matches were listed for each peak. A list of the seven most likely compounds from this analysis also is attached. It can be inferred from this data that these compounds represent oxidation products of the vinyl material and associated plasticizers.

It can be envisioned that different product ratios can be formed depending on environmental conditions. The major product appears to be a small molecular weight ketone, amine or acid formed from oxidative cleavage of HCl from the polyvinylchloride. This can result in the formation of chlorinated polyenes, low molecular weight compounds such as propanes, cyclopropanes and butanes, cyclobutanes, and their associated acids. These compounds typically exhibit high vapor pressures, thus the odors associated with aging of the vinyl coating.

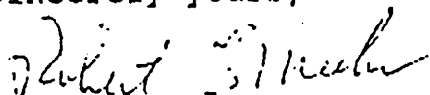
The seven compounds identified by us as being released from the weathered screen materials are ketones, amines, and low molecular weight organic acids. I have surveyed the toxicology

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literature for information on the potential adverse health effects that might result from exposure to these materials. As I suspected there was very little information in the literature as to the human toxicity of these compounds. However, it is well recognized that compounds such as these (i.e. ketones, amines, and weak organic acids) can be strong irritants to the nose, eyes, upper respiratory tract, and mucous membranes. Signs and symptoms related to exposure to these compounds might in some cases mimic those of a cold or flu. These would consist of eye irritation or red eyes, a runny nose, a raspy feeling in the throat, some hoarseness, and possibly bronchitis. Since these are all irritant effects it is to be expected that once the offending agent was removed, then these symptoms should reverse themselves and the health status should revert back to normal. It is important to stress that chronic or long-term effects resulting from exposure to these agents is not to be expected.

I hope this provides you with the information needed. If you have any questions concerning our analyses and/results or need any additional information, please do not hesitate to contact me. As always, I remain

Sincerely yours,



Robert G. Meeks, Ph.D., D.A.B.T.

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HEALTH EFFECTS GROUP, INC.

P.O. Box 41778 Tucson, Arizona 85717 (602) 696-4442

Toxicology
Environmental Health
Industrial Hygiene

Emissions From Polymer Coated Fiberglass Screening Material

A Summary of Study Findings

Submitted by:

Clifton D. Crutchfield, Ph.D.
Certified Industrial Hygienist

April 27, 1993

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INTRODUCTION

The following analysis was conducted at the request of Mr. Charles Morgan, Executive Vice President of Phifer Wire Products, Inc., P.O. Box 1700, Tuscaloosa, AL. In response to the request, an analysis has been made of the results of several studies that were conducted to identify and measure emission products from polymer coated fiberglass screening material. Degradation of the polymer coating on installed screens, presumably due to solar exposure, has been reported by a number of users.

Degradation of the screening material has been characterized by changes in appearance and by the presence of unpleasant or irritating odors. Concerns about possible health effects associated with either employee or resident exposures to emissions from degraded screens has prompted a series of four studies by four independent environmental organizations. A listing of the studies by type, date, and organization is included in Table I.

BRIEF SUMMARY OF STUDY RESULTS

Health Effects Group (HEG) Study:

A 1.5 M² sample of degraded sun screen material was observed to have a strong, penetrating odor after being confined in a sealed container. Gas chromatograph/mass spectrometry (GC/MS) analysis of air samples collected from a glass container holding the material produced a number of peaks indicating low levels of volatile organic compounds (VOCs). Direct headspace sampling of the screen material at elevated temperatures, coupled with cryogenic trapping to concentrate emission products, identified the following types of compounds which were present at low levels:

- Four-to-seven carbon ketones
(methyl ethyl ketone and methyl vinyl ketone were most prevalent)
- Phthalates
- Aliphatic hydrocarbons
- Aldehydes
- Trimethylsilanol
- Benzene

It was noted that the ketones were possible sources of the penetrating odors associated with the degraded screen material.

University of Alabama at Birmingham (UAB) Study:

The UAB study consisted of performing headspace sampling followed by GC/MS analysis of 30 cm² samples of weathered and non-weathered screen material. Weathered material produced peak heights that were 10 - 200 times larger than non-weathered samples. Tentative identification of a number of low mass, low boiling point compounds emitted by the screening material was made. Compound identifications were tentative because analytical peak areas (a reflection of amounts emitted) were too small to obtain reliable mass spectral identifications. The compounds appeared to be low levels of oxidation products of the screen coating, various phthalates associated with plasticizers used to manufacture the screen, and color pigments.

A second headspace study was conducted at an elevated temperature of 140 °C to increase emission rates and enhance compound identification. Seven specific compounds thought to be oxidation products of the screen material and associated plasticizers were identified with this technique, including ketones, amines, and weak organic acids. A brief review of the toxicity associated with the identified compounds concluded that they can be strong irritants to the nose, eyes, upper respiratory tract, and mucous membranes. No reference to exposure levels associated with such irritant effects was provided. The report stressed that chronic or long-term health effects were not expected from exposures to the degraded screen material.

Envirocomp (EC) Study:

The EC study involved an indoor air quality assessment of a residence in Hatfield, Massachusetts. Objectional odors from selected screens had been reported by the residence owner. The strongest odors were experienced during periods when direct sunlight contacted the screens. It was also reported that the odors were worse when the screens were newer. For purposes of this study, used screens were removed from storage and re-installed the day before sampling was performed.

A faint odor was reported by the residents when sampling was initiated in the afternoon of a sunny day (T_{out} = 68 °F; T_{in} = 73 °F). Screened windows were in direct sunlight. 100 liter air samples were collected over a 2-hour period on in-line charcoal and Tenax tubes, which were analyzed by GC/MS. Sample locations were in the vicinity of the offensive screens.

Sample results showed a number of low-level unidentifiable peaks of aliphatic hydrocarbons. Specific compounds identified in all samples included xylenes (all isomers), toluene, ethanol, methyl chloroform, and 2-methyl propane. Measured airborne concentrations ranged from 15 - 83 micrograms per cubic meter of air (ug/M³). The current OSHA exposure limit for toluene is approximately 4,000 times higher than the highest toluene

concentration (83 ug/M³) detected in the home. The other compounds were present in concentrations that were at least 10,000 times lower than their respective OSHA exposure limits. It was acknowledged in the report that workplace exposure limits are not applicable to a residential setting. The OSHA limits were reported as a comparison basis for what is considered to be safe in the work environment.

The EC report concluded in part that:

"Based on the nature of the specifically identified chemicals, it is suggested that they are not from the window screens. These are relatively common chemicals that may be found in a residence from materials such as paints, cleaning compounds, and pressurized containers. They were all found at very low levels, well below what would generally be considered a health hazard. The levels found were also well below the reported odor thresholds, meaning that on the day sampled, the average person would not be able to smell them."

The report also noted that the screens had been stored in the garage for several months, so that the nature or rate of off-gassed vapors could have changed.

Clayton Environmental Consultants (CEC) Report:

The CEC report consisted of two phases. The first phase involved indoor air quality evaluations in three homes whose residents had submitted a variety of complaints, including foul odors, coughing, allergies, burning eyes, and upper respiratory infections.

Direct-reading measurements of temperature, humidity, respirable particulate matter, and carbon dioxide were made in the three homes. Indoor temperature ranges (T_{out} = 27-29 °F; T_{in} = 73.8-78.5 °F) were above the ASHRAE recommended range of 68-74 °F. Relative humidities (19-26%) were below recommended comfort levels. Respirable particulate matter (10-20 ug/M³) and carbon dioxide levels (400-450 parts per million parts of air) were both below maximum recommended levels.

Air samples were collected in each home for inorganic acids, amines, and VOCs. Analytical results for the inorganic acids and amines in the three homes were all below the analytical limit of detection.

VOC samples were collected on Tenax tubes and analyzed by GC/MS. The following compounds were detected in one or more of the homes: benzene, ethylbenzene, styrene, toluene, 1,1,1-trichloroethane, and xylenes. Each of these compounds is common to modern households. Each compound's measured concentration was less than 10 ug/M³, with two exceptions. In one home,

36 ug/M³ of toluene and 300 ug/M³ of 1,1,1-trichloroethane were detected. A list of tentatively identified compounds were present in concentrations ranging from 0.2 - 10 ug/M³.

The USEPA has reported concentrations of hydrocarbons in non-industrial indoor air as follows:

<u>Contaminant</u>	<u>Concentration Range, ug/M³</u>
Aromatic hydrocarbons	21 - 1,100
Aliphatic hydrocarbons	11 - 270

Another paper by B. Siefert that was cited in the study stated that total VOC concentrations indoors greater than 300 ug/M³ are a point of concern to occupants. Total VOC concentrations in one of the three homes tested exceeded this level.

The CEC report on the indoor air quality assessments concluded that the sampling does not clearly indicate that the screen material is the single or even the major contributor.

The second phase of the CEC study involved headspace analyses of samples of screen material by GC/MS at temperatures of 30, 50, and 100 °C. A variety of volatile organics were detected, typically at fractional microgram levels. The highest reported levels were typically ketones, benzene, and phthalates. 1,1,1-trichloroethane was not observed to be a significant emission product from the screens.

CONCLUSIONS

Emissions from polymer coated fiberglass screening material manufactured by Phifer Wire, Inc. have been characterized in three separate studies. Each study used a gas chromatograph/mass spectrometer to separate and identify compounds that were volatilized from samples of the screen material at elevated temperatures. The samples of screen material were at various stages of degradation that were not characterized by any quantifiable scale.

A variety of compounds, represented as peaks on GC/MS output graphs, were observed in the samples. Most peaks were present in such low concentrations that they could not be reliably identified. Compounds emitted from screen samples at high enough concentrations to be specifically identified have shown a fair degree of consistency. Ketones, benzene, and phthalates seem to be the most prevalent emission products during analyses of the screening material. All compounds were emitted at very low levels.

The compounds detected in residences during the indoor air quality studies do not generally match the compounds that were identified during the GC/MS analyses of the screen material. This implies that the screens were probably not the source of the compounds measured, which are typically associated with a variety of products often found and used in homes.

Based upon the data generated in the above studies, an association between identified screen emission products and the types of health effects that have been reported is not evident. Compounds identified during the screen analysis studies, with the exception of benzene, can generally be described as potential irritants at high enough concentrations. As demonstrated by the results of the residential air samples, identified screen emission products were not present in the air at the analytical limits of detection, which are more than 10,000 times lower than levels considered to be safe in industry, where such compounds are routinely encountered.

Degraded or weathered screen material has been observed to have a irritating or penetrating odor. This odor was very noticeable in a sample from which identifiable concentrations could not be captured by airborne sampling. This indicates that the compound(s) responsible for the odor has an extremely low odor threshold.

E.I.R. EXHIBIT

~~MFR~~

DATE

INSPECTOR

OFFICE OF THE ATTORNEY GENERAL
CONSUMER INFORMATION & COMPLAINTS
INTER-OFFICE MEMORANDUM

TO: Leslie Hall DATE: May 3, 1993
FROM: Kathy Jarvis
REGARDING: Phifer Wire Products

Attached is additional information that I received from Mr. Charles Morgan of Phifer Wire Products. He wanted you to have this information before your meeting today at 2:00.

cc: Hugh Hegyi
cc: Steve Tseffos
cc: Dave Ronald

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